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Errata

Pag. 7. 2d Column, Line 30, read " expiration

P. 8 1st Column, Line 6, read " left auricle and ventricle.

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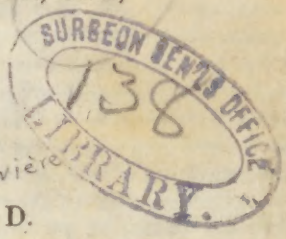
ADDRESS,

DELIVERED BEFORE THE

NEW-YORK COUNTY MEDICAL SOCIETY,

ON THE

ELEVENTH OF NOVEMBER, 1822,



BY

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ADDRESS.

MR. PRESIDENT—In conformity to our by-laws and appointment, I appear before the County Medical Society of New-York, to fulfil the duties of orator on some subject or question appertaining to medical science.

It is expected that, so recently after the severe epidemic of yellow fever which has been so distressing to our fellow citizens, by the general terror and suspension of business which its mortality has caused, that I should be induced to present some remarks on those topics so long controverted, the origin and the mode of treatment of this fatal distemper. But looking back to a vast collection of interesting writings on this epidemic, and also to my former feeble attempts, however snpported by experience, I still hesitate from the apprehension that the want either of talents or of a sufficient range of facts may lead me into error. Error indeed, is but too often the stumbling block to inquirers after truth, who like noble lords protecting their large estates and ancient privileges, take certain usages, customs, and notions to be claims, on which they must allow no trespass nor incroachment. Such persons forget that their favourite systems belong to the dominion of science, to which they are called upon to pay tribute, not in old and alloyed coins, but by some pledge or advance towards truth, in all those matters upon which comparative reason and wisdom only can decide. How far I may, in the subsequent remarks, fall into similar illusions or deserve a like reproof, you, Mr. President, and our associates here will be the best judges; and I respectfully solicit your indulgence and will thankfully receive your corrections.

The remark which the celebrated Rush has left us, "that no two yellow fevers resembled each other," has been strikingly exemplified by our recent epidemic. Its symptoms, rapidly successive, were more intensely malignant, and in several cases wore a pestilential aspect; nor have many fatal cases been protracted beyond the 10th or 12th day, while in general, the disease terminated on the 3d or 5th.

Hence it is, that from the number of cases reported to the Board of Health up to Saturday, October 26th, and which amount to 401, if, as they suggest, a proper exception be made, and a proportionate addition of the deaths which have occurred since, and of those which from various causes, have been omitted from the beginning, be added to the 230 which they report, a comparative mortality of more than 2 to 1 will be the result. If now from a general aggregate of mortality which I take to be 256, we abstract the several portions belonging to the upper district, the remaining total for the district of Broadway will be a proportion of nearly 3 to 1. This is unexampled in the history of the yellow fever, for the last 30 years in the United States. It is therefore matter of congratulation, that with a sanitary system so imperfect that it could not timely regulate the abandonment of infected districts, our public authorities, unbiassed by conflicting doctrines, have by various means checked the progress of a mortality, which might else have plunged our city in general and deplorable mourning.

Let us now comment a little upon its general result.

The Board of Health have informed us that of 65 individuals who resided in the upper part of the city, but who frequented the sickly districts, 34 have died. This is a diminished proportion of mortality. It appears of about the same proportion in the upper district, where out of 46 only 28 died; from which I am to conclude that the lower district has had a more deleterious and fatal influence upon its inhabitants than the upper one. This is a proof that the disease was not of the same specific or homogeneous nature. Since, therefore, it exhibited a greater degree of malignity in one part of the city than in another, and precisely in that district which is termed the cleanest and the healthiest, we must necessarily conclude that it was aggravated by local circumstances. Again, in these narrow, central and more confined streets, William, Maiden-lane, Stone, and

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Dutch, no more than one-third of the sick were its victims; in three houses and three families, in Dutch, Maiden-lane, and Nassau, 13 persons have sickened, seven were reported, and all have recovered. The milder nature of these cannot certainly be accounted for, but by their distance from the primary focus of infection.

In fine, the Board of Health have noticed Lewis and Grand streets at Corlaer's Hook. It should be recollected that serious representations on account of Williamsburgh Ferry as a great nuisance, were made to that body, exactly at the time when several people there were apparently labouring under malignant fever, and after the deaths of two reported cases had taken place. This mortality the more deserves our attention, that the Resident Physician examined several other cases at the time, which he did not think proper to report. I heartily joined in the opinion after I had examined them with Dr. D. who attended them, and who kindly imparted the best information on their nature. We then have here the proportion of 2 to 7. This is more favorable than any one yet noticed, and demonstratively proves, that the disease supposed by some to have been imported at the foot of Rector-street, where its mortality was three to one, so far diminished at Corlaer's Hook, and in some central streets, as to put on the form of an ordinary autumnal complaint. Such a transformation of a specific contagious disease is neither doctrinal nor comprehensible, in any sense of the controverted points.

The same inference is to be drawn from a short view of the character and symptoms of the epidemic; they have been different from former recorded prevalences, varied from district to district and from person to person, although of the same age, and apparently of the same constitution.

Black Vomit has not occurred frequently, owing to the more accelerated march of the disease, and to the great degree of prostration it induced. On an average not once in six cases could enough of it be observed to define the stage of the attack. Two young men died on the 5th day, after having rejected a small quantity of brown floculi, and dirty water, partly vomited, and partly expectorated by hawking and coughing. It is from this circumstance, I suppose, that some physicians at first expressed doubts whether this was really the yellow fever or not. It happened, however, to me to witness a most profuse and pigment-like black vomit, that commenced 30 hours before death; it was in the case of John Karney, a lad of 18, in Orange, from Courtlandt-street. He threw up, at different times, the quantity of three pints. In one of the early cases in Rector-street, black vomit was preceded by copious bleeding from the mouth.

Yellowness has seldom made its appearance at an early stage, and was generally imperfect at a later period. In some instances, it was replaced after death by a leaden or dark purplish hue all over the body. The eyes were always tinged with yellow. I saw but two cases of perfect and universal yellowness. One of a woman in Lombardy-street, No. 53, and when she was just recovering; the other a boy 14 years of age, who died with a carbuncle of which I will speak hereafter. Hence it is really difficult to determine whether that suffusion is *critical*, and a sure prognostic. A mixed hue of red and yellow giving a pale mahogany colour on the face, was however unexceptionably a criterion of the distemper.

Hæmorrhage: this symptom was marked by profusion and frequency, to a degree, greater than in former prevalences. In a young man in Church-street, it was so alarming from the fauces as to require topical applications, which proved inefficient, and he died. A girl of 12 years of age lost nearly half a pint of blood from the under lip, and she recovered; it was late in the disease. In a case in Rector-street, which terminated fatally, there was, on the 4th day, an oozing from the gums of a young man; it only tinged the water with which he rinsed his mouth; this proved the truth of the aphorism of Hippocrates; *si tertio vel quarto die parca, lethalis.*

The febrile type of yellow fever has, by many writers, been termed *remittent*, and similar to that of the ordinary autumnal bilious remittent. Of this I have seen many instances in former times, and of late years, we have the testimony of Dr. Waring, of Savannah, that in 1820, it was there *continued*, and also simultaneous with malignant bilious fever, and intermittent varieties. Neither type can, however, be truly assigned to our last epidemic. In no fatal case do I recollect to have seen more than one paroxysm of fever, and in such cases as recovered, the first paroxysm having been completed, the subsequent febrile attack was so feeble, as hardly to mark a return of it. In the former cases, the pulse remained slow, compressible, and gradually

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sinking; in the latter it was sometimes raised to a gentle febrile activity, every other day, yet without chills, and with moderate headache, pain, and anxiety *in epigastrio*.

I have already spoken of *pestilential* symptoms in this fever, alluding to such affections as are particularly characteristic of the plague, and which identify therefore all kinds of malignant fevers, which are excited by what I call, specific and deadly gases, arising from *beds of putrid and fermented matters*. We have it recorded that in great European or Asiatic plagues, a considerable proportion of the sick had jaundice and black vomit; on the other hand, that in the yellow fever of 1797, in Philadelphia, a few persons died with buboes and with gangrenous spots on the body. I can now testify that a Mrs. E——, of Rector-street, removed to Beaver, has had two carbuncles, one on the hand, and the other on the right temple. She was the patient of Dr. Neilson, and I saw her at the suppurating stage of the carbuncle, perforated honey-comb like for the discharge of matter. The other instance was of Martin Earl, fourteen years of age; he had a carbuncle on the right knee, which bled constantly like a *fungus hæmatodes*, and was as large as a goose egg, black and gangrenous, two days before his death. The girl M——, 12 years old, at Mrs. B——'s Bancker-street, had a gangrenous scabbing and sloughing, from the labia pudendi, and her body presented here and there a singular exanthema, resembling large serous pustules, Pemphigus-like, each of them seated in the centre of a yellow areola.

Here I should not omit to say, that our fever besides has, in most cases, been marked by the eruption on the arms, neck, and breast of small red petechiæ, frequently taken for musquito bites. The last pestilential characteristic, I will define from a modern writer, who has seen the plague in the Levant, and principally at Constantinople. (Vide M'Clean's Researches, vol. II. p. 23.) "When the plague was at its height in Malta, 1813, it was observed to be of short duration; *the first inflammatory symptoms* were succeeded by a great prostration of strength; some died suddenly, without any previous symptom, but after death were covered with spots, and livid marks," &c. Similar instances were witnessed in our city by several practitioners. A livery stable keeper, Mr. Brown, was found dead in his house in Thames-street, a few days after the departure of his family for the country, where he was preparing to join them; the appearance of his body confirmed, to the coroner, the rapid and fatal seizure under which he died, without being able to call for help. The cases of Mr. J. M'K——, of Wm. Tate, a colored man, of a wood-sawyer, and of Richard Scott, of Bancker-street, were nearly the same. The first took to his bed on Saturday with a violent and hot fever; on Sunday he fell into a great collapse, could scarcely think or speak, was in the last agonies on Monday, and died on Tuesday morning, covered after death with spots and livid marks. The absence of the usual characteristic symptoms of yellow fever, in the last-mentioned case was such as to induce some medical visitors, to doubt respecting the nature of the disease: he was nearly black all over, but retained yellow eyes. It would be difficult in the history of the two pestilences, the Asiatic and the American, to find a more striking coincidence of symptoms.

The following symptoms are important to assist in defining the diagnosis of the yellow fever. The one is the amhelous respiration at the first stage gradually becoming laborious, with snoring, sighing, or with dispnœa, and lastly stertorous, loud, difficult, and convulsive, causing evidently an extraordinary action of the thoracic muscles, without the least appearance of disease or obstruction in the bronchiæ, to cause a cough or wheezing. This symptom was so aggravated in many instances, as to induce a belief that the patient laboured under an asthmatic affection, and in the case of William Tate, was absolutely mistaken, until a few hours before death, for an acute pulmonary attack. The other symptom is the remarkable abatement of animal heat throughout the whole system. Having had the rare opportunity of meeting with two cases just within a few hours after the invasion of the disease, when restlessness, pains in the head, in the eyes already suffused, and in the back, with sick stomach, had taken place, I satisfied myself that animal heat was already lowered by many degrees. During the first paroxysm of the fever, the heat is again much raised, but it has a peculiar poignant, or mordicant feeling, seldom observed in ordinary acute or inflammatory fevers, and it soon subsides, contrasting with a florid red color of the face, and a rosy hue all over the body. As the case becomes more decidedly fatal, the heat more sensibly declines on every part of the body, and so certainly, that by a little attention to its comparative degree, one

might correctly prognosticate the duration of life.

Having thus endeavoured to portray the general and pathognomonic symptoms of our last yellow fever, I would beg leave to draw from them some inferences respecting its *diagnosis*, and the best rules to be guided by, in the management of that formidable disease. In this second part of the task which I have imposed upon myself, I regret to be obliged, Mr. President, to make a few remarks against the supposed contagion of yellow fever, such as it is upheld by our laws, and by a few medical gentlemen; it is by no means out of disrespect to the one, nor of disregard to the other, but the soundness of any doctrinal point of the diagnosis and treatment of the yellow fever, must be established on either its *contagious* or its *infectious* attribute. The scientific and important path we are now in, I do affirm, cannot be percurred, by us, without that analytical rationale which must lead to the true cause of the pestilence.

Contagion means the power of a poison arising from a sick person, which in any shape whatsoever can, by contact or by the breath, reproduce the same sickness in another. Now whenever such a probable propagation of yellow fever has taken place, we unexceptionably find that the poison did not originate from the body of the patient, but only from the surrounding and infecting atmosphere.

Contagion, therefore, in the yellow fever is untenable as a matter of fact, and there never was, for the discouragement of contention, a more experimental season than the last. One hundred and thirty-seven persons, sick with the fever, having been removed from the infected districts into different healthy parts of the city, full of inhabitants, with whom no restriction of intercourse was adopted, no personal communication of the disease ever took place. On the 15th of September, the same fact and conclusive result were confirmed and proclaimed by the Board of Health, nor has any event or circumstance since that time disclosed to us the least vestige of contagion.

But a single atom of yellow fever contagion, it is said, can assimilate *impure air* or a *congenial* atmosphere, and so reproduce itself. Had not this hypothesis been long resorted to, it is confidently believed it would not have been now revived, after our having experienced quite the reverse of this operation. The disease and the mortality have progressed in inverse ratio to the cleanliness of houses and streets, while the middle, confined and narrow districts have furnished but a small number of cases and a lessened list of mortality.

On the other hand, the above mentioned *assimilation* of an impure or congenial atmosphere into contagion, is a novel proposition in experimental physics and chemistry. We have heard it used in physiological explanations of digestion, and other animal functions, in explaining how certain matters and nutritive substances can be changed into various secretions, and be *assimilated* to vital fluids. Is it meant that impure or congenial air can be digested or transformed into another substance or an adventitious contagion? This is very difficult to comprehend, and the more so that reason, under the guidance of science, has long apprised us of the unalterable *essence of elements*, even through the most torturing experimental operations of heat, cold, pressure, and complicated affinities.

The theory of *infection* must therefore be resorted to. In it we find no mysteries but what can be explained by analogy or by the laws of nature. The matter of infection is that which through respiration or through internal or external organs, can create or excite various distempers in men and brutes, from the mildest degree to the most pestilential form. The atmosphere, currents of air, winds are its vehicles, heat and moisture its powerful auxiliaries. Hence the existence of the matter of infection can be renewed during a whole season, may be transported from place to place, leave untouched one vicinity, and unexpectedly reach other distant habitations. Infecting marsh miasmata have universally been acknowledged to cause various sorts of intermittent & remittent fevers. Human effluvia or exhalations from damaged provisions in such confined places as jails, hospitals, camps and ships, are evidently productive of a numerous tribe of malignant fevers, even in one sex, exclusive to the other, and in a peculiar circumstance of their functions; such is that distressing child-bed fever in the lying-in hospitals of Westminster and Paris, which has so often robbed every new-born infant of a mother. There is no populous city in the world, but at certain critical seasons and vicissitudes of heat, cold and moisture, have had the crowded habitations of the poor infected with severe and fatal typhoid diseases. So a number of individuals, their clothes being impregnated with poisonous fumes, once created in the Old Bailey Sessions,

in England, an infecting atmosphere which proved mortal to many spectators and to some of the judges.

But these causes cannot yet account for pestilential diseases. There must be a great difference between impure air, that is rendered such by the aggregation of putrid and noxious substances, or by humid and debilitating vapours, and that air, which being scarcely observed by our senses, provided it reaches the inmost recesses of respiration, instantly becomes a deadly blast which must subvert the laws of vitality, the laws of animal and organic life. Where shall we find by analogy, a cause or power in nature similar to this, which can pervade a whole city or a neighbourhood, while adjacent places and countries, in full intercourse with the first, are left undisturbed in their usual healthiness, unless we accuse beds or mounds of putrid fermentation, which incessantly emit poisonous, pestilential, or deadly gases? Before the science of pneumatic chemistry had taught mankind that there were many gaseous combinations of elements which could fatally or morbidly affect human life, we find that during the age and labours of alchymy and of the chemical empiricism of Paracelsus, great progress had been made in the art of impregnating water with very deadly gases. These were wretches whose business it was to deal out for hire poisons diluted in limpid waters. The too celebrated *agua tofana* of the Italians in that barbarous age of intestine wars, was the last resort of inimical courts and hostile princes, of conspirators against religious or political chieftains. At the still recent period of the destruction of the Jesuits the *agua tofana* was in vogue, for it is believed that it was administered to Pope Ganganelli. This was truly a specific of chemical compounds, no less destructive to animal life, than any one of those which our chemists may elicit from elements and substances daily submitted to their experiments and researches, such as prussic acid, fixed airs, carburetted hydrogens, various oxydes of azote, or nitrogens. But far better than art nature can produce all such destructive and invisible compounds from her laboratories of decomposition and the dark recesses of putrid fermentation, where she arranges her materials for a new order of things. If, therefore, during seasons of exhalations, deadly and poisonous gases are incessantly emitted from beds and strata of putrid and fermented matter, especially in the vicinity or in the centre of large populations, why should not these satisfactorily account for periodical or casual pestilences?

In calling your attention to the two last symptoms I mentioned as peculiar in yellow fever, I would ask, whether there can be any better or more demonstrative proof of the primary action of the disease on the organs of respiration, than the abatement of natural heat and the difficulty of breathing? I am happy to mention that a respectable writer supports my observation on the abatement of heat;—Don *Alphonso de Maria*, in his description of the yellow fever of Cadiz, 1820, has noticed in all its stages what he calls *Frescura*, that is coolness, or abatement of heat; and with respect to the difficulty of respiration, I believe as many professional writers have stated it, as have been witnesses to the anhelation, panting, groaning, involuntary moaning, and convulsive breathing of the sick in the yellow fever. In no prevalence, however, have I so distinctly noticed the loud, hard, laborious, stertorous and gradually suffocating respiration of the patients. This of course must have been primarily effected by vitiated air containing deleterious gases. In the application of this principle to the subject of my investigation, it is almost unnecessary to remind you of the laws of that all-important function of animal life; a few of them are yet involved in great obscurity; but the following are to be depended upon, and are vouched for by the most celebrated chemists and physiologists.

First. That atmospheric air is at each inspiration put in contact with venal blood, at the mouths of the capillary nets of the pulmonary artery, that are ramified in the air cells of the lungs.

Secondly, That this venal blood, coming by the pulmonary artery from the right ventricle of the heart, carries much gaseous carbon and hydrogen, or carburetted hydrogen.

Thirdly, That by the laws of repective affinities, and by the compression of the atmosphere, air is immediately decomposed, giving one part of its oxygen to the carbon to form fixed air, and the other to hydrogen to convert it into aqueous vapour, both of which fixed air and aqueous vapour, with the remaining nitrogen, are thrown out at each inspiration, in the same specified quantity as that which was received.

Fourthly, That whether any proportion of oxygen is given to the blood or not, (a question

by no means yet decided,) the blood then receives a florid color, and two degrees of heat, a part of that which was latent in the portion of atmospheric air now decomposed.

Fifthly, That this new or arterial blood, returned to the left ventricle of the heart by the pulmonary vein, is, at every inspiration, (about 20 times in a minute,) supplied with two degrees of heat, which replace the deficiency of two degrees in the venal blood which was carried from the right ventricle into the lungs.

Sixthly, That two great operations, absolutely necessary to life, are therefore accomplished by respiration; the one is the decarbonization of the blood, and the other is a sufficient supply of heat to that fluid. The quantity of the first has been calculated equal to 40,000 cubic inches of carbonic acid gas in twenty-four hours, which give three quarters of a pound avoirdupois of solid carbon, elicited from the blood. The other is a supply of about 2400 thermometrical degrees of heat every hour, which would be sufficient to burn and consume the body in that time, was it not lost and sufficiently exhausted as fast as obtained, leaving to the blood, that temperature which is necessary for vital functions; that is from 98 to 100 degrees.

It must now be easily and obviously inferrable, that all the alterations that may take place in atmospheric air, especially by the presence of deleterious gases, which are opposed to, or can suspend the decarbonization of the venal blood, and the supply of animal heat that it requires, are destructive to life, and actually occasion a pestilential disorder. Not wishing to encroach upon the time of the Medical Society, I suppress the details of the successive effects in the human system from such subversion of the laws that impart and protect life, and which might be shown, exactly corresponding to every symptom of yellow fever or other pestilences. It suffices to notice that arterial blood, partly deprived of its vitality, by insensible degrees, affects all organs in which it abounds. The lungs it affects with anhelation, the heart with fullness, the brain with stupefaction or delirium, the stomach with incessant irritation; on the other hand, venous blood for want of heat and action must clog those large glands in which it should perform abundant secretions. Tardy and stagnant in the capillary system it decomposes itself, and suffuses the skin with a purple or yellow colour. A muscular reaction, manifested by pains in the limbs, in the head, and in the dorsal and abdominal muscles, induces at first a paroxysm of fever, which by accelerating respiration might restore its regular functions, but the eventual prostration and collapse are the signals of a fatal termination before which the accumulated carbon of the blood is sometimes disgorged into the pori biliarii, more frequently from their inner membranes into the stomach and intestines; at this last stage, putrefaction commences throughout the system; for in this and other plagues, it is known to precede agony and death.

It may be objected against the preceding *diagnosis*, that inflammation is as operative and characteristic in yellow fever, as in any disorder brought on by excessive irritation or by certain poisons; that deep marks of the same are always seen and proved by autopsic examination in the coats of the stomach, also in the intestines, the mesentery, and the liver; that the reaction of the same has found its way to the brain, causing congestion in its ventricles, &c. all which invalidates the proposed theory which specifies no cause of irritation and inflammation.

I answer that the above ravages, apparently of inflammation, take place more or less in cases of poisoning by opium, so that they are in medical jurisprudence, indicative of its operation through congestion or through torpor of the circulation; that only such autopsic appearances appertain to inflammation, as are simultaneous with febrile action, created by excess of vitality, or by some lesion of the circulating system, which having accelerated either circulation or respiration, has augmented the animal heat. This is an important distinction in the pathology of phlegmasiæ, and can be further illustrated against the modern and celebrated system of La Medecine Physiologique, by Mons. de Broussais.

A more important objection is that of a lurking or latent cause of the disease, not apparent in infected persons, till many days after their removal into healthy situations. This fact, at first, would seem, not only to contradict the immediate operation of poisonous gases upon the organs of respiration, but would make it probable that yellow fever is created by a *specific poison*, which like those of the small poz, syphilis, &c. requires before its operation a certain elaboration in the human system after contamination. This, however, is neither the law, nor the fact that governs the formation of the yellow fever, which most generally takes place immediately after exposure, is known to fluctuate or

to pause in its progress through populous cities according to the vicissitudes of the weather, and the variations of temperature, ultimately disappears at a period *of frost*, no one sickening after that, from formerly contracted poison. Admitting the occasional fact of a protracted operation of the principle of the disease, it is no more than the result of constitutional susceptibility, very active among northern strangers, slow and perhaps null among the nations of tropical regions. We find among us also, that certain individuals may with impunity face the danger weeks and months longer than others. But, there is a key to unlock even this mystery, in the theory of the diagnosis which I have proposed; for if a youthful, warm, hale and plethoric constitution proves to be highly and always more susceptible, than the weak, pale, cold and phlegmatic, it is evidently because the CARBONIZATION of blood in the first is proportionally more considerable than in the last. It requires for the first a more abundant decarbonization and a greater supply of heat from the decomposition of atmospheric air, than that which an impaired respiratory function may still afford to the latter.

In a great variety of constitutions or of pulmonary organizations there may be some which have been partially affected by the offending gases, although decarbonization was not totally suspended and animal heat but in a small proportion diminished; still the loss has remained irrecoverable, owing to the contraction of the air cells, which not expanding again, cannot receive and decompose the usual quantity of atmospheric air, until venous blood has accumulated enough of the offensive principles which give rise to the disease. To such a progress as this certain cases of protracted infection are no doubt to be ascribed.

Some practical facts should now be offered in proof and illustration of our theory, to furnish us with rules for the most proper treatment of yellow fever.

The removal of the sick from the seat of infection into healthy situations has in all parts of the world proved conducive to the abatement of malignant symptoms and the cure of yellow fever. Instances are also numerous of a fortunate escape from the disease by the early administration of an emetic, followed by an active purge, especially if the operation of the remedies can be productive of considerable bilious discharges. This fact I have happily ascertained in persons who had already exhibited those unequivocal symptoms, anhelous respiration and coldness of the extremities. A vomitive immediately causes contractions of the diaphragm, acts upon the præcordia and the organs of respiration; it is therefore the best calculated remedy to remove their torpor, and to equalize in the lungs the venous and arterial circulation. The application of artificial heat in or about the chest, is also remedial, and might be diffused by the help of sodorifics and hot drinks, if these were applied with judgment, and the patient not wrapped in blankets to choke his breathing instead of affording him pure and fresh air for respiration. This injudicious process of sweating has been very popular in this city; and I was apprised that it had been resorted to in many cases before a physician could be obtained, these it aggravated and they terminated fatally.

An equally important indication is that of promoting bilious evacuations, for no patient ever recovers from the yellow fever unless he be assisted by abundant discharges of hepatic and cystic bile. The inefficacy of the best means used for that purpose is a certain prognostic of the fatality of the case. This remark has been confirmed to me by physicians who were much employed in this and former epidemics. In the case of two vigorous young men whom I visited only on the 3d day of the disease, I, being aware of their danger, unremittingly attempted to obtain such evacuations by a variety of powerful medicines, and which caused painful excoriations; they actively operated, yet without bringing away any bile, and they both died on the fifth day. Bilious discharges were probably impeded by the want of a free circulation in the biliary viscera; when they take place we may conclude that the depuration of the venous blood is going on in the liver, and the secretion of bile is fully restored.

The submurias hydrargiri, so well known by its efficacy in all diseases of hepatic congestion, is the best adapted for this indication in the yellow fever, and may also be assisted by jalap, or by aloes and by neutral salts combined together, also by other drastic medicines according to the age and strength of the patient; yet, as time is precious in every stage of the disease, and because the action of calomel may be divided between the salivary glands and the intestinal canal, thereby delaying the chance of its efficacy. I would unhesitatingly recommend at the same time mercurial frictions over the region of the liver. I cannot well account upon what princi-

pie liberal doses of ammonia, alternating with calomel, would promote bilious evacuations. I was, however, informed of the fact by a patient recovered from the fover of 1819, by professor Hosack. I adopted the remedy with great satisfaction, in all cases which I had an early or timely opportunity to manage.

When the stages of the disease are not rapidly running into each other, the black vomit is formed at the fourth or fifth day, and is generally fatal; yet several instances of recovery from it, I have seen, and many are on record; but the means or remedies to which this happy result was attributed, were so various and sometimes so contradictory, that no fixed rule could be adopted, nor any indication formed to guide the practioner. We have also been much perplexed to know the nature of black vomit, whether from bile or blood: what a contrast, to see that matter, the forerunner of death, and which issues from putrid or gangrenous surfaces, so perfectly inert and innocuous when applied on the healthy living subject! A third and recent hypothesis has defined it to be the matter of a peculiar morbid secretion of the stomach; this brings us nearer to the truth. The famous French surgeon, *Lecat*, has already apprised us that all black matter secreted in or excreted from the human body, is nothing but a perfect *animal-Æthiops!* He meant pure carbon; Carbon! which *I have proved to constitute yellow fever by its accumulation in the blood!*

Black vomit is secreted chiefly through the stomach, and is obviously supplied by the numerous arteries called *vasa brevia*, which closely line the fundus and sides of that large viseus. The formation of the matter of black vomit is therefore the *critical* resolution of the yellow fever; and if that matter can be eliminated from the blood, by the means which nature has determined, without the concomitants of hæmorrhage or gangrene, the disease is perfectly judged. For the illustration of these remarks, I bring the interesting and well ascertained fact of many cases of yellow fever recovered from the stage of black vomit, by the liberal exhibition of Cinchona, sulphuric acid, and lumps of ice, than which nothing could be more judiciously selected to arrest the impending dangers of this perilous crisis. The authority of Dr. *R. L. Walker* in this novel and successful practice, is the more valuable, that, unbiassed by theory, he was led to it by practical rules alone, and that he has taken as many medical witnesses of the fact as there were physicians interested and pleased in the observation.

I must here suppress many other practical means and cautious to be regulated by the varied characters and symptoms which the yellow fever assumes at different periods and seasons. Of bleeding, however, I should say that it was not at all adapted to the asthenic character of our last epidemic; and hardly once required before or during the first paroxysm of fever, after which a great degree of prostration took place and the pulse became generally flabby and compressible, even when a florid complexion deceitfully promised a sufficient muscular reaction to justify depletion. I was once unexpectedly obliged to desist from letting out a second ounce of blood, to close the vein of a strong and plethoric young man; and witnessed the rapid aggravation of symptoms after one bleeding, in another. On this subject, whoever has attempted repeated spillings of blood, during our last epidemic, has rashly marked his way by an equal number of disastrous failures. Let not such an observation seem to admit that venesection may not be remedial in yellow fever. Having been a contemporary of Dr. B. Rush in all the prevalences, in which he often and successfully resorted to the lancet, I can bear evidence to both the inflammatory diathesis or idiosyncrasy of the patients at that time, and to the great arterial action in those epidemics. We cannot account for all the accidental circumstances by which the same kind of pestilential influence, at different years and seasons, materially alters the character or type of the disease; but, when it was not immediately destructive to the nervous and muscular energy of the patients, repeated bleedings have been necessary and eminently successful.

I now close this too long communication, Mr. President, by offering an apologetic explanation for not having said a single word on the vicissitudes of the weather, winds and temperature, during the last season, nor of the local causes, which, by their operation, have spread terror and death throughout the finest part of this city. Although in my individual capacity, I have, from the first, declared my opinion; yet, as a member of the Medical Society, I do not presume to surmise to you any view or measure on these matters, since their immediate connection with the welfare and health of the public, must hereafter demand and engage this scientific institution to concur with the public authorities in ascertaining and devising an effectual correction

for such sources of impurity as may excite a similar recurrence. But allow me, Mr. President, and Gentlemen of the Society, my fellow members of this Institution, respectfully to address my most pressing solicitations to you, that you will cordially and diligently unite your researches, studies, and particular attention to the subject of a calamity, which, for these many years past, seems to increase upon us, notwithstanding strict laws and quarantine regulations, legally adopted and observed in all commercial ports of the United States. Whether it be owing to a considerable increase of population or to a yearly prolongation of warm seasons, it, however, is the fact, that most of the inland settlements on or about the *Ohio* and *Mississippi*, are or have been visited by some kind of pestilence which public rumour assimilates to yellow fever. The mortality by it in *New-Orleans* and *Pensacola*, has been truly deplorable; it has also been very great this season in a well known sickly district of a sister city, as I am correctly informed.

Already the silence of that community on their own sufferings, proves their absolute distrust in the efficacy of restrictive systems. Be that as it may, while in this enlightened age civilized and free government feel themselves obliged to assist Christian nations against their barbarous oppressors, while the religionists of a meek and divine redeemer bestow immense treasures on the instruction of the most distant pagans and savages; while literati and philosophers daily divulge, for the benefit of mankind, all their useful labours and discoveries, how much does the investigation of a most desolating pestilence become an important duty to all members of the medical profession! and, on such an occasion, to whom, but to them, (under Providence,) must afflicted and distressed humanity look for help?

November 11th, 1822.